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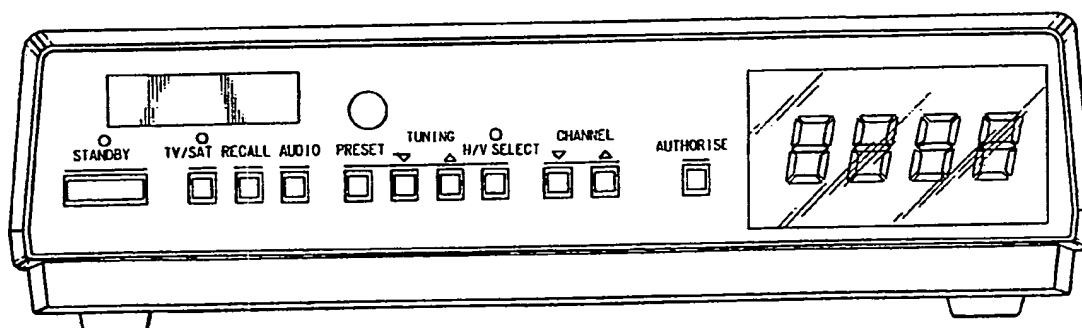
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(54) Title: AUDIO, VIDEO OR TELEVISION APPARATUS



(57) Abstract

Audio, video or television apparatus, e.g. a satellite receiver/decoder, or a video cassette recorder, can be locked by a selected key press sequence, and unlocked by a related key press sequence. In case the key press sequence is forgotten, the apparatus is automatically unlocked a predetermined time period, e.g. 48 hours, after being locked. When locked, the depression of keys restarts the time period. With a broadcast receiving apparatus, the receiver may be locked in the off condition, or may be locked to a single channel, or may be locked so that a specified channel can not be received.

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AUDIO, VIDEO OR TELEVISION APPARATUSBackground of the Invention

This invention relates to audio, video or television apparatus.

U.K. Patent Application GB-A-2 206 759 describes a television set which can be electronically locked by a sequence of key presses and then can only be unlocked by re-entering the key press sequence. Such a system may be used by parents to stop use of the television set by children.

Summary of the Invention

According to the present invention there is provided audio, video or television apparatus comprising means for generating an audio or video output signal, a plurality of operating keys associated with the apparatus, lock means responsive to a locking sequence which includes a selected key press sequence to lock the apparatus and responsive to an unlocking sequence which includes a related key press sequence to unlock the apparatus, and timer means, in which the lock means includes means responsive to the timer means for automatically unlocking the apparatus a predetermined time period after locking thereof.

Brief Description of the Drawings

An embodiment of the invention will be described by way of example with reference to the accompanying drawings, in which:-

Figure 1 is a view of the front panel of a satellite television receiver/decoder, and

Figure 2 shows a remote control unit for use therewith.

Detailed Description of the Preferred Embodiment

Figure 1 shows the front panel of a combined satellite receiver/decoder embodying the invention for use with broadcast television signals received from satellite. The front panel has conventional buttons or the like for the necessary functions to operate the equipment as follows:-

STANDBY - this button serves to switch the equipment between standby and fully operative modes.

TV/SAT - switches the associated television from internal (terrestrial) signal to external (satellite derived) signal if connection is made via SCART socket.

RECALL - displays the frequency and audio setting for the current channel.

AUDIO - selects one of seven audio modes.

PRESET - stores a user-changed set of channel parameters.

TUNING UP and DOWN - activation of these buttons allows the user to select a desired transmission. The frequency is displayed in the four-digit display at the right hand end of the front panel. The tuned frequency can then be stored and recalled by use of the channel buttons, see below.

H/V SELECT - enables switching between horizontally and vertically polarised received signals at the antenna.

CHANNEL UP and DOWN - this enables the user to select the desired one of a number of pretuned channels.

AUTHORISE - registers a user request for debiting credits from a pay-per-view smart card.

The receiver may also comprise a card reader for receiving a decrypting or descrambling enabling card to allow the reception of scrambled signals on a prepayment or other basis.

The receiver includes appropriate circuitry to allow the equipment to be electronically locked. Such a facility is designed for use by parents to inhibit use of the equipment by children, and is, therefore, termed a parental lock. It is achieved by the parent entering a personal identification number (PIN) into the equipment, and then entering an instruction which locks the receiver either so that it cannot be used at all, or so that it can be locked to only one channel or alternatively so that it can not be tuned to one selected channel. Thus the receiver has two locked modes and, of course, an unlocked mode.

In order to change between these modes, a sequence of operation is followed by the user. First the H/V SELECT button is pressed once, and secondly the same H/V SELECT button is pressed again. As this button operates as a "toggle" on the receiver circuitry, the net effect is to cancel each other out. However, this "primes" the receiver circuitry so that it recognises that it is now in the "lock entry sequence" function. The third key press then initiates PIN entry. Either of two keys may be pressed for this purpose. If the AUDIO key is pressed, the PIN will be displayed as it is entered by the parent. Alternatively, if the RECALL button is pressed, the PIN will not be displayed as entered by the parent but instead a blank appears as each subsequent digit is entered. That is to say the bar or hyphen which normally appears in the absence of a character is removed.

As soon as the third key of the sequence has been pressed, four horizontal bars appear on the receiver display which indicates the need for a PIN to be entered. The four PIN digits are then entered from the remote handset, shown in Figure 2 of the drawings. It will be appreciated that there are no numeric keys available on the main equipment as shown in Figure 1. If the third key press of the lock entry sequence was AUDIO, the PIN digits appear on the display left to right as

they are entered. As noted above, if the third key press was RECALL, a blank appears as each digit is entered.

If the receiver was previously in unlocked mode, the PIN is then stored in an electronically erasable read-only memory (EEROM) and will act as the current PIN for the lock function about to be performed. Alternatively, if this is an attempt to unlock a previously locked feature, the PIN is checked with the one held in the EEROM. If they do not match, the receiver immediately drops back to the mode it was in before the lock entry sequence was commenced, and the whole procedure will need to be repeated with the correct PIN to gain access to the unlocking utility. If the PIN does match, or if the receiver was previously in unlocked mode, a brief period of half a second after the entry of the fourth digit, eight vertical bars appear on the receiver display indicating that the system is now ready to receive a lock or unlock command.

Thus it is seen that this stage can only be reached in one of two ways:-

1. By entering the correct four digits if a lock function has already been actioned or
2. By entering any four digits if no lock function has been actioned.

It should be noted that the particular remote control illustrated includes certain digits 1*, 2*, 3* and 4* but that these have no effect on the locking function.

Finally, the third stage in operation of the lock is the lock function selection operation. Any one of three keys may be pressed here. The three keys have the following functions:-

CHANNEL DOWN prevents the current channel to which the receiver is tuned from being accessed.

RECALL locks out all of the keys and does not allow the equipment to be used, except to recommence the lock entry sequence for an unlocking operation.

AUDIO unlocks the system from either of the above modes.

Entry of an invalid key will result in dropping back to the state before the lock entry sequence began.

After any of the keys CHANNEL DOWN, RECALL or AUDIO has been pressed, the appropriate lock or unlock function is performed. Any function thus achieved will completely override any other so that locking the keys will override and permanently erase any channel lock that may have been set up previously. Thus it is not possible to have more than one lock function active at any time.

It should be noted that the "all-key" lock, initiated by the RECALL button operates as follows. If the receiver is tuned, it will be locked to the particular channel it was on before the locking procedure was initiated. If the receiver is off, i.e. on standby it will be locked into standby so that no broadcasts can be received.

The receiver/decoder includes a software timer and advantage of this is taken for the following purpose. It is common for users to forget the PIN which they have entered with the obvious inconvenient consequences. In practice we have appreciated that it is not normally necessary for the lock function to be maintained indefinitely. Accordingly, the receiver notes the time at which any locking function is effected and automatically deactivates the lock a specified period, such as forty eight hours, after the locking operation. Thus, the equipment automatically reverts to the unlocked mode forty eight hours after programming and the inconvenience caused by forgetting the PIN number (or by malicious locking of the equipment) is minimised while maintaining the important function of the apparatus.

The software unlock timer is only active while power is applied to the receiver. Also it resets itself, i.e. re-starts its 48-hour period, if any of the keys are pressed. This is in order to minimise the chance of someone finding the PIN by experimentation. The effect of this is thus that a user must turn the set on, and leave it for 48 hours without pressing any keys or using the remote handset in order for the lock to be

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deactivated automatically.

While described in the context of a satellite receiver/decoder it will be appreciated that the invention is applicable generally to audio, video or television apparatus, including for example video cassette recorders.

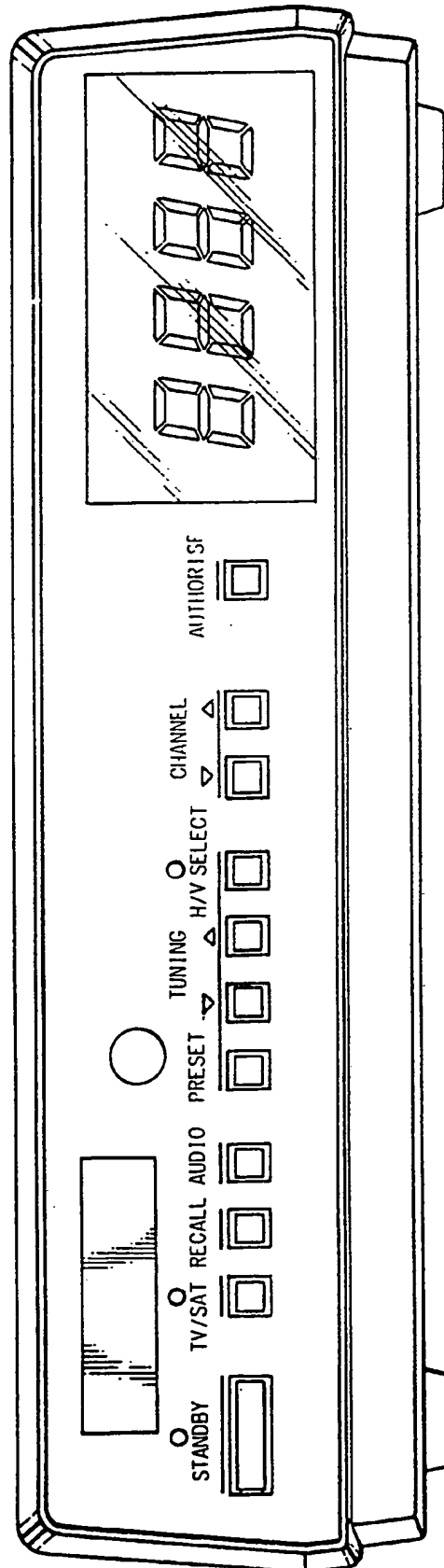
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CLAIMS

1. Audio, video or television apparatus comprising means for generating an audio or video output signal, a plurality of operating keys associated with the apparatus, lock means responsive to a locking sequence which includes a selected key press sequence to lock the apparatus and responsive to an unlocking sequence which includes a related key press sequence to unlock the apparatus, and timer means, in which the lock means includes means responsive to the timer means for automatically unlocking the apparatus a predetermined time period after locking thereof.
2. Apparatus according to claim 1, in which the apparatus is a satellite television receiver/decoder.
3. Apparatus according to claim 1 or 2, in which the locking sequence comprises key presses on the apparatus and numeric key presses on a remote control.
4. Apparatus according to claim 1, 2 or 3, in which the lock means includes means for restarting the timing operation if keys are depressed while the apparatus is locked.
5. Apparatus according to any of claims 1 to 4, in which the lock means can be selectively operated by different key press sequences to lock the apparatus into one of two modes, in one of which all except one function of the apparatus is unlocked.
6. Apparatus according to any of claims 1 to 5, in which the lock means can be operated to lock the apparatus to the function which is active when the locking takes place.
7. Apparatus according to claim 5 or 6, in which the said function may be the reception of a selected broadcast channel.

1/2

Fig.1



2/2

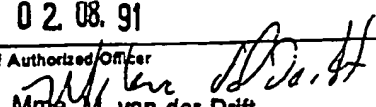
Fig. 2

STAND BY		RECALL	
<input type="text"/>		<input type="text"/>	
1	2	3	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
4	5	6	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
7	8	9	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
0	1*	2*	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
3*	4*	TV/SAT	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
CHANNEL		AUDIO	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
REMOTE CONTROLLER			

INTERNATIONAL SEARCH REPORT

International Application No **PCT/GB 91/00467**

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC IPC ⁵ : H 04 N 5/44						
II. FIELDS SEARCHED <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Minimum Documentation Searched ⁷</div> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; border-bottom: 1px solid black;">Classification System</td> <td style="border-bottom: 1px solid black;">Classification Symbols</td> </tr> <tr> <td style="padding: 5px;">IPC⁵</td> <td style="padding: 5px;">H 04 N</td> </tr> </table> <div style="text-align: center; border-top: 1px solid black; border-bottom: 1px solid black;">Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸</div>			Classification System	Classification Symbols	IPC ⁵	H 04 N
Classification System	Classification Symbols					
IPC ⁵	H 04 N					
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹						
Category ⁹	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³				
X	US, A, 4510623 (BONNEAU et al.) 9 April 1985 see column 2, lines 1-46; column 5, line 52 - column 6, line 9; column 9, lines 16-58; figures 1,4	1-3,6,7				
A	--	5				
A	US, A, 4718107 (HAYES) 5 January 1988 see column 1, lines 45-68; column 2, lines 40-48; column 6, lines 12-41; figures 2-5,10	1-3,5-7				
A	GB, A, 2206759 (GOLDSTAR) 11 January 1989 see page 2, lines 1-20; page 3, lines 12-23; figures 1,3,4 cited in the application	1-3				

<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>¹⁰ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"A" document member of the same patent family</p> </div> </div>						
IV. CERTIFICATION						
Date of the Actual Completion of the International Search <div style="text-align: center; font-weight: bold;">4th June 1991</div>		Date of Mailing of this International Search Report <div style="text-align: center; font-weight: bold;">02.08.91</div>				
International Searching Authority <div style="text-align: center; font-weight: bold;">EUROPEAN PATENT OFFICE</div>		Signature of Authorized Officer <div style="text-align: center;">  Mme. M. van der Drift </div>				

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
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SA 46354

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 16/07/91
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 4510623	09-04-85	None	
US-A- 4718107	05-01-88	None	
GB-A- 2206759	11-01-89	None	